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IS 11746 (1986): Luncheon Beef, Canned [FAD 18: Slaughter House and Meat Industry]



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IS : 11746 - 1986

Indian Standard

**SPECIFICATION FOR
LUNCHEON BEEF, CANNED**

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INDIAN STANDARDS INSTITUTION

MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG

NEW DELHI 110002

Indian Standard

SPECIFICATION FOR LUNCHEON BEEF, CANNED

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**AMENDMENT NO. 1 MARCH 2004
TO
IS 11746 : 1986 SPECIFICATION FOR LUNCHEON
BEEF, CANNED**

(*Page 4, clause 3.1.1*) — Insert the following clause after 3.1.1:

‘3.1.2 Quality of water used for processing shall conform to IS 4251 : 1967‡.’

(*Page 4, footnotes*) — Insert the following footnot at the end:

‘‡Quality tolerances for water for processed food industry.’

(FAD 18)

Reprography Unit, BIS, New Delhi, India

**AMENDMENT NO. 2 APRIL 2011
TO
IS 11746 : 1986 SPECIFICATION FOR
LUNCHEON BEEF, CANNED**

[Page 7, clause 4.2(c)] — Substitute 'Net quantity of content of the can;' for 'Net mass of content of the can;'. .

[Page 7, clause 4.2(g)] — Insert the following at the end:

- 'h) Any other marking required under the *Standards of Weights and Measures (Packaged Commodities) Rules, 1977.*'

(FAD 18)

Reprography Unit, BIS, New Delhi, India

Indian Standard

SPECIFICATION FOR LUNCHEON BEEF, CANNED

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 16 July 1986, after the draft finalized by the Meat Industry Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 The demand for luncheon beef is increasing considerably, both from the civilian population as well as the defence personnel. It has considerable export potential also. It was, therefore, felt that this standard should be formulated so that suitable quality control may be exercised.

0.3 In the preparation of this standard, due consideration has been given to the provisions of the *Prevention of Food Adulteration Act*, 1954, and the Rules framed thereunder. However, this standard is subject to the restrictions imposed under these, wherever applicable.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for luncheon beef, canned.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 Meat — The uncured, sound and wholesome flesh of the cattle including buffaloes.

2.2 Inedible Offal — Includes brain, fries (liver), gut, paunches, udders, sweetbreads (thymus, pancreas), tripe, spleen, lungs, salivary

*Rules for rounding off numerical values (revised).

glands, lymphatic glands, testicles, uterus, ovaries, skin (rind), cartilage and bony tissues and other offals.

2.3 Luncheon Beef — A mixture of minced meat and cereal containing not less than 80 percent beef meat including fat (not exceeding 25 percent).

3. REQUIREMENTS

3.1 Hygienic Requirements — The material shall be prepared and handled under strict hygienic conditions by persons free from contagious and infectious diseases and only in premises maintained in a thoroughly clean and hygienic condition and having adequate and safe water supply (*see IS : 2491-1972**) and duly approved and licenced by the public health authorities concerned. All workers shall wear clean, washed, white clothings. Necessary precautions shall be taken to prevent incidental contamination of the product from soiled equipment or from personnel suffering from injuries.

3.1.1 All equipment coming in contact with raw materials or products in the course of manufacture shall be kept clean. An ample supply of steam and water, hose, brushes and other equipment necessary for proper cleaning of machinery and equipment shall be available. The equipment may be sterilized by immersion in, or swabbing with hypochlorite or other suitable chlorine solution having 200 ppm available chlorine.

3.2 Ingredient Requirement

3.2.1 Quality of Meat — The meat used for the product shall be derived from healthy animals subjected to ante-mortem and post-mortem inspections in accordance with IS : 1982-1971†, and slaughtered in licensed premises. The manufacturing units which have a licensed slaughter house in the manufacturing premises only may use the meat from hot carcass, otherwise the meat to be used for manufacture of luncheon beef should have been chilled to 5°C for not more than 72 hours. The meat shall be of good and uniform colour. It shall be properly trimmed so as to be free of excess fat, blood clots, bruises bones, fibrous tissues, glands and serous membranes. Skin, gristle, tendons and coarse connective tissue in amounts naturally associated with the flesh may be used. Five percent of heart may be added after proper cleaning and processing. In case frozen trimmings and frozen meat are used, they shall not exceed 50 percent of the total quantity and should have been stored at - 18°C in the freezer for not more than

*Code for hygienic conditions for food processing units (*first revision*).

†Code of practice for ante-mortem and post-mortem inspection of meat animals (*first revision*).

180 days and should not show freezer burn and rancidity, and be sound, and of good colour. Soft and oily meat shall not be used. It shall be free from foreign odour or flavour, discolouration, and deterioration. Inedible meats and inedible offals shall not be used.

3.2.2 Filler — Only cereal rusk, cracker meal (broken biscuits), potato flour or other wholesome edible material of farinaceous origin shall be used as filler (*see 3.4.4.1*).

3.2.3 Salt — Salt used shall conform to IS : 253-1970*. It shall not exceed by 3 percent of the total lot.

3.2.4 Nitrate and Nitrite — The nitrate content shall not exceed 0.05 percent by mass (expressed as potassium or sodium nitrate) and the nitrite content 0.015 percent by mass (expressed as potassium or sodium nitrite) in the finished product.

3.2.5 Other Ingredients — All other ingredients and seasonings, such as sugar and spices, shall be clean, sound and fully wholesome and fit for human consumption in all respects.

3.2.6 Fat — The meat fat shall be pure, wholesome, edible and may be added raw, minced or rendered.

3.3 Preparation and Processing — Luncheon beef (canned) shall contain no preservative other than salt, potassium (or sodium) nitrate or nitrite, sugar and seasonings. The meat, chilled at 4.5°C, shall be properly chopped and seasoned in accordance with the best commercial practice and under satisfactory hygienic conditions in respect of operation, material and equipment in use. The product shall be solid packed under hygienic conditions into sound and thoroughly clean containers and then sealed hermetically. If the cans are lacquered, the lacquer used shall be of such quality that it does not impart any foreign unpleasant taste and smell to the contents of the can and does not peel off during processing and storage of the product. The lacquer shall not be soluble in fat or brine to any extent. The cans shall show no evidence of rusting. The can shall be thoroughly cleaned by means of hot water jet or other approved satisfactory methods before filling. Processing shall be at such temperature and for such length of time as will ensure thorough cooking and adequate sterilization of the product without burning, scorching or overcooking.

3.4 Requirements of the Finished Product

3.4.1 Flavour and Appearance — Luncheon beef (canned) shall have characteristic flavour and taste of meat. The colour shall be uniform. No artificial colouring matter shall be used.

*Specification for edible common salt (*second revision*).

3.4.2 Fill of Container — The product after chilling to $18 \pm 1^\circ\text{C}$, in the container shall be a solid block and shall slide easily out of the open container, the product being capable of being sliced into 5 mm thick slices, without these breaking and without the edges of these becoming ragged. The exuding fluid shall not exceed 2 percent by mass of the net contents of can. Any gelatin produced *in-situ* is acceptable.

3.4.3 Freedom from Defects — The product shall be free from foreign matter, such as hair, bristle and skin. The product shall also be free from objectionable odour or flavour. The final product shall not show evidence of burning, scorching or overcooking. The product shall also be free from can staining.

3.4.4 Composition

3.4.4.1 The total fillers (see 3.2.2) used shall not exceed 12 percent of the finished product, as determined by method given in Appendix A.

3.4.4.2 When tested according to the method prescribed in Appendix B, the finished product shall have good lean meat content and shall have not less than 80 percent by mass of total meat of which fat shall not exceed 25 percent. The total percentage of binder, seasoning, edible offal, salt, sugar and added moisture shall not exceed 20 percent. The meat in the cans shall have been processed according to the best commercial practices.

3.4.4.3 Nitrate and nitrite — The nitrate content shall not exceed 0.05 percent by mass (expressed as potassium or sodium nitrate). When tested according to IS : 5960 (Part 8)-1974* and the nitrite content 0.015 percent by mass (expressed as potassium or sodium nitrite) in the finished product when tested according to IS : 5960 (Part 7)-1974† (see 3.2.4).

3.4.5 Vacuum — The can shall give a negative pressure of not less than 15 cm of vacuum at ambient temperature.

3.4.6 The material shall also conform to the limits for metallic impurities and microbiological activity as prescribed in Table 1.

4. PACKING AND MARKING

4.1 Packing in Cans — Subject to the agreement between the purchaser and the vendor, each can (if not lacquered for meat packing) shall be coated on the inner side with edible gelatin, lard or lined with vegetable parchment paper before filling the product.

*Methods of test for meat and meat products: Part 8 Determination of nitrate content.

†Methods of test for meat and meat products: Part 7 Determination of nitrite content.

TABLE 1 LIMITS FOR METALLIC IMPURITIES AND MICROBIOLOGICAL ACTIVITY

(Clause 3.4.6)

SL No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST (REF TO APPENDIX IN IS : 1743-1973*)
(1)	(2)	(3)	(4)
i)	Arsenic, ppm, <i>Max</i>	1	B
ii)	Lead, ppm, <i>Max</i>	5	C
iii)	Copper, ppm, <i>Max</i>	20	D
iv)	Zinc, ppm, <i>Max</i>	50	E
v)	Tin, ppm, <i>Max</i>	250	F
vi)	Microbiological activity	To satisfy the requirements of the test	G

*Specification for mutton and goat meat canned in brine (*first revision*).

4.1.1 Packing in Cases — Unless otherwise specified, cans, shall be packed in cases sufficiently strong to withstand rough handling during transit.

4.2 Marking — The cans may be labelled either by printing or lithographing on the cans themselves or by pasting printed labels as agreed to between the purchaser and the vendor. The label shall bear the following information in addition to any other information required under *Prevention of Food Adulteration Act and Rules*.

- Name of the product along with brand name, if any;
- Name and address of the manufacturer;
- Net mass content of the can;
- Batch or code number — embossed indelibly on the can;
- Warranty period;
- Name of ingredients in descending order; and
- Licence number given by the health authorities.

4.2.1 Each container may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

5. SAMPLING

5.1 Sampling of luncheon beef (canned) shall be done according to the method prescribed in Appendix H of IS : 1743-1973*.

6. TESTS

6.1 Tests shall be conducted as specified in 3.4.4.1, 3.4.4.2, 3.4.4.3, 3.4.5 and col 4 of Table 1.

6.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (*see* IS:1070 - 1977†) shall be employed in the tests.

NOTE — Pure chemicals shall mean chemicals that do not contain impurities which affect the test results.

A P P E N D I X A

(*Clause 3.4.4.1*)

METHOD FOR DETERMINATION OF FILLER

A-0. PRINCIPLE

A-0.1 After the sugars present in the sample are leached out, starch is hydrolyzed and estimated as invert sugars.

A-1. PROCEDURE

A-1.1 To the weighed sample add a little water and heat to 60°C. Allow to stand for some time to obtain a solution of the starch. Add about 100 ml of 95 percent alcohol and centrifuge till the precipitate settles at the bottom. Filter and wash the residue with about 50 percent alcohol until the filtrate gives no test for sugars, when tested as per details given below.

A-1.1.1 To a few ml of the filtrate in a small narrow test tube, add 2 drops of 10 percent alcoholic solution of alpha-naphthol. Allow 1 ml of pure concentrated sulphuric acid to flow slowly down the side of the test tube so as to form a layer beneath the aqueous solution. If sugars are present, a red ring will appear within a few seconds at the junction of the two layers.

A-1.2 Transfer the residue to a 500 ml Erlenmeyer flask with about 100 ml of water. Add 20 ml of concentrated hydrochloric acid, place

*Specification for mutton and goat meat canned in brine (*first revision*).

†Specification for water for general laboratory use (*second revision*).

a funnel in the neck of the flask to prevent evaporation, and heat in a boiling water bath for 2 hours and 30 minutes. Cool, nearly neutralize with sodium hydroxide using phenolphthalein as indicator and make up to a definite volume with water. Determine the reducing sugars as described in Appendix A of IS : 11747-1986*.

Filler, percent by mass = Percentage of reducing sugars found $\times$ 0.90

APPENDIX B

(Clause 3.4.4.2)

DETERMINATION OF THE TOTAL MEAT CONTENT

B-1. APPARATUS

B-1.1 Kjeldahl Flask — 500-ml capacity.

B-1.2 Distillation Assembly — The assembly consists of a round bottomed flask of 1 000 ml capacity fitted with a rubber stopper through which passes one end of the connecting bulb tube. The other end of the bulb tube is connected to the condenser which is attached by means of a rubber tube to a dip tube which dips into a known quantity of standard sulphuric acid contained in a beaker of 250-ml capacity.

B-2. REAGENTS

B-2.1 Potassium Sulphate or Anhydrous Sodium Sulphate

B-2.2 Concentrated Sulphuric Acid — relative density 1.84.

B-2.3 Yellow Mercuric Oxide

B-2.4 Potassium Hydrogen Phthalate

B-2.5 Methyl Red-Methylene Blue Indicator Solution — Prepared by mixing one part of 0.2 percent solution of methyl red in rectified spirit (*see* IS:323-1959†) with one part of 0.1 percent solution of methylene blue in rectified spirit.

B-2.6 Phenolphthalein Indicator Solution — Prepared by dissolving 0.1 g of phenolphthalein in 100 ml of rectified spirit (*see* IS : 323-1959†).

B-2.7 Standard Sodium Hydroxide Solution — 0.5 N.

B-2.8 Standard Sulphuric Acid — 0.5 N.

*Specification for corned beef, canned.

†Specification for rectified spirit (*revised*).

B-2.9 Sodium Hydroxide Solution — Dissolve approximately 450 g of sodium hydroxide in 550 ml of distilled water. Cool and filter through glass wool, if necessary.

B-3. PROCEDURE

B-3.1 Determination of Lean Meat Content

B-3.1.1 Accurately weigh about 2 g of the test sample and transfer it to the Kjeldahl digestion flask. Add 10 to 15 g of potassium sulphate (or anhydrous sodium sulphate), 0.1 to 0.3 g of mercuric oxide and 15 to 25 ml of concentrated sulphuric acid. Heat gently until frothing ceases and then heat strongly until the solution becomes clear and continue the digestion for at least 30 minutes longer (about 3 hours are required for complete digestion). Cool, and dilute with about 250 ml of distilled water. Cool to room temperature, add a few glass beads and run 50 ml of the sodium hydroxide solution down the side of the flask so that it forms a separate layer and does not mix with the acid solution at once.

Connect to the distillation assembly, mix the contents of the flask by gently swirling and then distil off the ammonia in about 250 ml of distillate into an Erlenmeyer flask containing a known volume of excess of standard sulphuric acid. Titrate the excess acid in the Erlenmeyer flask with the standard sodium hydroxide solution using 3 to 4 drops of the methyl red-methylene blue indicator solution.

B-3.1.2 Carry out a blank determination using all the reagents in the same quantities but without the material to be tested.

B-3.1.3 Calculation

$$\text{a) Nitrogen, percent} = \frac{(X - V) N \times 1.4}{M}$$

where

X = volume, in ml, of sulphuric acid neutralized by the ammonia distilled from the sample;

V = volume, in ml, of sulphuric acid neutralized by the ammonia distilled from the blank;

N = normality of the sulphuric acid; and

M = mass, in g, of sample taken.

$$\text{b) Lean meat content, percent} = \text{Nitrogen percent} \times 30$$

B-3.2 Determination of Fat Content

B-3.2.1 Accurately weigh about 5 g of the sample into a suitable evaporating basin containing short glass rod with a flattened end. Heat

on a water bath until most of the moisture is expelled. Cool the basin and add 25 ml of ether and disintegrate the residue in ether by means of the glass rod. Decant the ether extract through a filter paper. Repeat the maceration and extraction until all the fat has been removed (about five extractions are necessary). Remove the ether from the combined extracts by distillation from a previously weighed 50-ml distillation flask. Dry the flask and contents to constant weight under vacuum on a boiling water-bath.

B-3.2.2 Calculation

$$\text{Fat, percent (} X \text{)} = \frac{\text{Mass of ether extract} \times 100}{\text{Mass of sample taken}}$$

B-3.3 Calculation of Total Meat Content — Calculate the total meat content as follows:

$$\text{Total meat content, percent (} Y \text{)} = (\text{Lean meat, percent}) + (\text{Fat, percent})$$

$$\text{B-3.4 Fat percentage on meat basis (see 3.4.4.2)} = \frac{X \times 100}{Y}$$

IS : 11746 - 1986

(Continued from page 2)

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INDIAN STANDARDS INSTITUTION

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

Telephones: 331 01 31, 331 13 75

Telegrams: Manaksanstha
(Common to all Offices)

Regional Offices:

	Telephone
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†Eastern : 1/14 C.I.T. Scheme VII M, V.I.P. Road, Maniktola, CALCUTTA 700054	36 24 99
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